Approved 6-15-98 gm

Fig. 23

Example 12							
TEST RESULTS ON COPPER-CLAD EPOXY GLASS, GLASS POLYIMIDE, AND POLYIMIDE							
Sample	Via Diameter (μm)	Speed (mm/s)	Bite Size (μm)	Rep Rate (kHz)	# Passes	Taper (μm)	Throughput (holes/sec)
1	102	8	--	3.2	15	12	1.7
2	51	3.2	--	1.6	10	12	2.4
3	102	7.8	--	3.1	5	12	4.4
4	51	3.2	--	2.1	2	12	7.8
5	25	N/A	--	4	100 pulses	12	15
6	102	7.6	--	1.5	6	12	3.8
7	51	3.2	--	1.6	4	12	5.3
8	102	8	--	+5	10	12	2
9	51	3.2	--	+20	1	12	3.7

Fig. 24

Power Density = Fluence/Pulse Width

	Average Power	Spot Size Diameter	Spot Size Radius	Repetition Rate	Spot Area	Spot Area	Power/ Rep. Rate	Fluence	Power Density	
	mW	micro-m	micro-m	Hz	m^2	cm^2	J	J/cm^2	W/cm^2	
Example 12									@40 ns	@90 ns
Sample 1	225	25	12.5	3200	4.91E-10	4.91E-06	7.03E-05	14.32	3.58×10^8	1.59×10^8
Sample 2	225	25	12.5	1600	4.91E-10	4.91E-06	1.41E-04	28.72	7.18×10^8	3.19×10^8
Sample 3	225	25	12.5	3100	4.91E-10	4.91E-06	7.26E-05	14.79	3.70×10^8	1.64×10^8
Sample 4	225	25	12.5	2100	4.91E-10	4.91E-06	1.07E-04	21.79	5.45×10^8	2.42×10^8
Sample 5	225	25	12.5	4000	4.91E-10	4.91E-06	5.63E-05	11.47	2.87×10^8	1.27×10^8
Sample 6	225	25	12.5	1500	4.91E-10	4.91E-06	1.5E-04	30.5	7.63×10^8	3.39×10^8
Sample 7	225	25	12.5	1600	4.91E-10	4.91E-06	1.41E-04	28.72	7.18×10^8	3.19×10^8
Sample 8	225	25	12.5	5000	4.91E-10	4.91E-06	4.5E-05	9.16	2.29×10^8	1.02×10^8
Sample 9	225	25	12.5	20000	4.91E-10	4.91E-06	1.13E-05	2.30	5.75×10^7	2.56×10^7